

for the abrupt movements southward, which occurred on the 9th and 12th. Both of these movements seem to have been due to the reaction of areas of high pressure adjoining the low. Until the center had reached Kansas, on the 9th, little or no rain had fallen within the area of low pressure. Subsequently light rains fell to the north and northwest of the center.

III.—This area of low pressure was faintly indicated by the reports from Saskatchewan and Assiniboia on the evening of the 11th. On the following morning the center of slight energy was well defined in the vicinity of St. Vincent. Its course was southeast to Illinois and then eastward to the coast near New York, where it arrived on the evening of the 14th. After reaching the Atlantic its course changed to northeast. Striking the coast of Nova Scotia on the evening of the 15th, it moved northward across this province and then recurved to the northwest and disappeared in the Hudson Bay territory.

IV.—The edge of this depression was visible in Alberta on the evening of the 12th. On the following morning the center was well defined in the vicinity of Edmonton, and during the next twenty-four hours advanced eastward to Prince Albert. In the subsequent twenty-four hours it moved south-southeast to South Dakota, and at the same time a depression formed farther south, in southern Kansas. At the next report both had been filled up by an advancing high.

V.—On the 16th there were indications of an area of low pressure on the coast of British Columbia, and on the morning of the 17th there seemed to be an offshoot from this area in Saskatchewan. The sudden advance of a high from the north apparently forced this depression southward to South Dakota, and its subsequent course is traced as track V. Its movement was nearly east to Ontario, and then northeast down the St. Lawrence Valley. Its energy was at no time great, but it was accompanied by considerable rainfall in the Lake region.

VI.—This area was slow in movement, occupying five days in its translation from North Dakota to the province of Quebec. Its first appearance is seen on the p. m. map of the 21st, on which the southern side of a depression is visible in Assiniboia and Montana. The following day the depression seems to have receded northward. On the morning of the 23d either this depression with much diminished energy, or a secondary development from the main area, was central near St. Vincent, and its subsequent movement is indicated by track VI. It remained nearly stationary for thirty-six hours and afterward advanced eastward across the Lake region and down the St. Lawrence Valley. Its energy increased as it approached the Lake region and moderate rains accompanied it. After reaching the vicinity of Quebec, it passed northward into the Hudson Bay territory.

VII.—This depression appeared in British Columbia on the morning of the 25th. Its center seems to have been situated far to the north and to have been advancing eastward in high latitudes until the evening of the 26th. At that time the center was near Edmonton, where the remarkably low pressure of 28.94 inches was reported. It remained nearly stationary during the following twenty-four hours and, at

the same time, a second low formed in western Nebraska. These two centers, designated as VII and VIIa, existed separately and well defined, as portions of one great depression, for thirty-six hours. During this time they moved southward until, on the morning of the 29th, they were found in southern Minnesota and western Kansas, respectively. The more northerly one seems then to have moved rapidly to the northeast, and there are indications that it ultimately reached the Atlantic near Newfoundland. The southerly one was visible for twenty-four hours longer, remaining nearly stationary, and was then absorbed into a new low, which had advanced from the northwest. The progress of this storm was marked by violent winds and, during its latter part, by abundant rains. The depth of the depression was unusual, a barometer of 28.88 being reported at Battleford at 8 a. m. of the 27th.

VIII.—This area of low pressure appeared in Alberta on the morning of the 29th and, after remaining stationary for thirty-six hours, moved rapidly to South Dakota, then returned and reached the vicinity of Winnipeg by the evening of the 31st.

#### MOVEMENT OF CENTERS.

The following table shows the date and location of the center for the beginning and ending of each area of high or low pressure that has appeared on the U. S. weather maps during the month, together with the average daily and hourly velocities. The monthly averages are computed in two ways; first, by considering each path as a unit, and second, by giving equal weight to each day of observation:

*Movement of centers of areas of high and low pressure.*

Number.	First observed.			Last observed.			Path.		Average velocities.	
	Date.	Lat. N.	Long. W.	Date.	Lat. N.	Long. W.	Length.	Duration.	Daily.	Hourly.
<b>High areas.</b>										
I.....	1, a. m.	49	69	4, a. m.	33	79	1,500	3.0	500	20.8
II*.....	9, a. m.	47	124	13, a. m.	28	91	2,600	4.0	650	27.1
III.....	13, a. m.	45	95	15, a. m.	40	83	700	2.0	350	14.6
IV.....	15, a. m.	51	115	18, a. m.	31	97	1,700	3.0	567	23.6
V†.....	19, a. m.	54	105	23, a. m.	36	79	1,900	4.0	475	19.8
VI.....	25, a. m.	51	107	28, a. m.	39	80	1,800	3.0	600	25.0
Sums.....							10,300	19.0	3,142	.....
Mean of 6 paths.....									524	21.8
Mean of 19 days.....									537	22.4
<b>Low areas.</b>										
I.....	1, p. m.	51	113	4, p. m.	50	97	1,100	3.0	367	15.3
II.....	6, p. m.	51	117	13, p. m.	48	64	4,500	7.0	643	26.8
III.....	12, a. m.	48	97	17, a. m.	49	64	2,350	5.0	470	19.6
IV.....	13, a. m.	53	114	15, a. m.	43	99	1,150	2.0	575	24.0
V.....	17, p. m.	45	99	20, a. m.	49	87	1,650	2.5	660	27.5
VI.....	23, a. m.	48	96	23, a. m.	48	70	2,050	5.0	410	17.1
VII.....	26, p. m.	54	113	29, a. m.	44	94	1,350	2.5	540	22.5
VIII.....	29, a. m.	52	114	31, p. m.	49	96	1,300	2.5	530	21.7
Sums.....							15,450	29.5	4,185	.....
Mean of 8 paths.....									523	21.8
Mean of 29.5 days.....									524	21.8

\* Only that portion of the path subsequent to the center's entrance within the coast line is considered.

† The thirty-six hours during which the center remained stationary where first observed is not considered.

#### NORTH ATLANTIC METEOROLOGY.

##### OCEAN FOG FOR MAY.

The limits of fog belts for May, 1895, as determined by reports from shipmasters, are shown on Chart I by dotted shading. Near the Grand Banks of Newfoundland fog was

reported on twenty-five days; between the fifty-fifth and sixty-fifth meridians, on 21 dates; and west of the sixty-fifth meridian, on 21 dates. Compared with the corresponding month of the last seven years, the dates of occurrence of fog

near the Grand Banks numbered 8 more than usual; between the fifty-fifth and sixty-fifth meridians, 8 more than usual; and west of the sixty-fifth meridian, 5 more than usual.

#### OCEAN ICE FOR MAY.

The limits of the region within which icebergs or field ice were reported for May, 1895, are shown on Chart I by crosses. The southernmost ice reported, a large berg observed on the 6th in the position given, was about one-quarter of a degree farther south than the average southern limit of ice for May, and the easternmost ice reported, 4 large bergs, noted on the 6th, in the position given in the table, was nearly three-quarters of a degree east of the average eastern limit of ice for the month.

The following table shows the southern and eastern limits of the regions within which icebergs or field ice were reported for May during the last thirteen years:

Southern and eastern limits of ice.					
Southern limit.			Eastern limit.		
Month.	Lat. N.	Long. W.	Month.	Lat. N.	Long. W.
May, 1883.....	40 30	47 00	May, 1883.....	45 40	45 12
May, 1884.....	41 30	47 30	May, 1884.....	43 30	44 50
May, 1885.....	40 50	48 15	May, 1885.....	42 30	40 10
May, 1886.....	41 30	51 30	May, 1886.....	48 55	46 13
May, 1887.....	39 38	46 00	May, 1887.....	39 38	46 00
May, 1888.....	41 00	46 00	May, 1888.....	41 00	46 00
May, 1889.....	43 07	55 47	May, 1889.....	49 46	36 48
May, 1890.....	40 50	50 28	May, 1890.....	44 12	36 25
May, 1891.....	40 49	49 07	May, 1891.....	48 00	45 00
May, 1892.....	42 14	51 20	May, 1892.....	45 05	41 14
May, 1893.....	41 05	55 55	May, 1893.....	47 02	42 16
May, 1894.....	40 34	48 35	May, 1894.....	43 31	43 37
May, 1895.....	41 00	49 00	May, 1895.....	47 00	42 00
Mean.....	41 08	48 47	Mean.....	45 04	42 45

\* On the 7th three small pieces of ice were reported in N. 49° 03', W. 35° 40'.

### TEMPERATURE OF THE AIR.

[In degrees Fahrenheit.]

The mean temperature is given for each station in Table II, for voluntary observers, but in Table I, for the regular stations of the Weather Bureau, both the mean temperatures and the departures from the normal are given for the current month.

The monthly mean temperature published in Table I, for the regular stations of the Weather Bureau, is the simple mean of all the daily maxima and minima; for voluntary stations a variety of methods of computation is necessarily allowed, as shown by the notes appended to Table II.

The distribution of the monthly mean temperature of the air over the United States and Canada is shown by the dotted isotherms on Chart II; the lines are drawn over the high irregular surface of the Rocky Mountain plateau, although the temperatures have not been reduced to sea level, and the isotherms, therefore, relate to the average surface of the country occupied by our observers; such isotherms are controlled largely by the local topography, and should be drawn and studied in connection with a contour map.

The extreme mean temperatures were Key West, 79.9; Yuma, 79.2; Eastport, 48.3.

The regular diurnal period in temperature is shown by the hourly means given in Table IV for all stations having self-registers.

As compared with the normal for May, the mean temperature for the current month was decidedly in excess from New England and Nova Scotia to the Rocky Mountains. It was deficient in the south Atlantic and Gulf States. The greatest excesses were: White River, 5.6; Sault Ste. Marie, 5.5; Marquette, 5.3; Port Huron, 5.2. The greatest deficits were: Walla Walla, 4.2; Shreveport, 4.1; Springfield, Mo., and Augusta, 3.8; Kittyhawk, 3.7.

Considered by districts, the mean temperatures for the current month show departures from normal temperatures as given in Table I. The greatest positive departure was: Upper Lake, 3.7. The greatest negative departure: South Atlantic, 2.5.

The years of highest and lowest mean temperature are shown in Table I of the REVIEW for May, 1894. The mean temperature for May, 1895, was the highest on record at Sault Ste. Marie, 52.5; Topeka, 66.6; Concordia, 66.2; Wichita, 67.4; Tampa, 77.2. It was the lowest on record at Columbia, S. C., 69.8; Augusta, 69.0; Shreveport, 70.2; Palestine, 69.4.

The maximum and minimum temperatures of the current month are given in Table I. The highest maxima were Yuma, 109, 8th; Tucson, 101, 7th. The lowest maxima were

Eureka, 68, 11th; Port Angeles, 75, 16th. The highest minimum was Key West, 67, 3d. The lowest minimum was Havre, 22, 11th.

The years of highest maximum and lowest minimum temperatures are given in the last four columns of Table I of the current REVIEW. During the present month the maximum temperatures were the highest on record at most of the stations in the eastern and central parts of the United States and also at some places on the Pacific coast. The following are the highest: Concordia, 100; Dodge City, 99; Raleigh and Marquette, 98; Point Reyes Light, 82. The minimum temperatures were the lowest on record at Springfield, Ill., 34; Louisville, 36; Parkersburg, 32.

The accumulated monthly departures from normal temperatures since January 1 to the end of the current month are given in the second column of the following table, and the average departures are given in the third column, for comparison with the departures of current conditions of vegetation from the normal conditions.

Districts.	Accumulated departures.		Districts.	Accumulated departures.	
	Total.	Average.		Total.	Average.
North Dakota.....	+11.7	+2.3	New England.....	-3.2	-0.6
Missouri Valley.....	+3.8	+0.8	Middle Atlantic.....	-12.1	-2.4
North plateau.....	+9.3	+1.9	South Atlantic.....	-17.2	-3.4
North Pacific.....	+0.4	+0.1	Florida Peninsula.....	-11.2	-2.2
			East Gulf.....	-18.3	-3.7
			West Gulf.....	-15.6	-3.1
			Ohio Valley and Tenn....	-16.2	-3.2
			Lower Lakes.....	-8.9	-1.8
			Upper Lakes.....	-1.6	-0.3
			Upper Mississippi.....	-4.2	-0.8
			Northern slope.....	-1.5	-0.3
			Middle slope.....	-2.1	-0.4
			Southern slope (Abilene).....	-14.4	-2.9
			Southern plateau.....	-2.8	-0.6
			Middle plateau.....	-5.0	-1.0
			Middle Pacific.....	-2.2	-0.4
			South Pacific.....	-1.5	-0.3

The greatest daily range of temperature and the extreme monthly range are given for each of the regular Weather Bureau stations in Table I, which also gives data from which may be computed the extreme monthly ranges for each station. The largest values among the greatest daily ranges were: North Platte, 48; Pueblo, 47; Olympia, 46; Milwaukee and Havre, 45. The smallest values were: Port Eads, 11; Galveston, 14; Hatteras, 16; Corpus Christi, 17; Key West and Charleston, 18; Pensacola, 19; Jupiter, 20. Among the extreme monthly ranges the largest values were: Marquette